PART – I
A STUDY ON SARANAIVER
(TRIANTHEMA PORTULACASTRUM LINN)
FOR PAANDU NOI

PART- II
A STUDY ON SARVANOI LINGA CHENDURAM
FOR KALLADAIPPU

Dissertation submitted to

The Tamilnadu Dr. M.G.R. Medical University, Chennai

in partial fulfillment of the requirements for
the award of Degree of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH – II GUNAPADAM

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARUMBAKKAM, CHENNAI – 600 106.

SEPTEMBER - 2008

BONAFIDE CERTIFICATE

Certified that this thesis titled **"A STUDY ON SARANAIVER CHOORANAM AND SARVANOI LINGA CHENDURAM"** is the bonafide work of **Dr. V.K.MAHALAKSHMI** (**Reg. No: 32051604)** who carried out the dissertation work under my supervision. Certified further, that to the best of my knowledge, the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Place : Chennai

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FIGURE - I

A. T.S. of root - (Scale – L)

B. T.S. of root - Enlarged (scale – K)

C. T.S. of stem - (scale – L)

D. T.S. of stem - Parenchyme cells showing drugs (Scale – J)

E. T.S. of stem - A sector enlarged (scale – K)

ABBREVIATIONS

Sph	-	Secondary phloem
Sxy	-	Secondary xylem
V	-	Vessel
Dr	-	Druses of calcium oxalate crystal
Co	-	Collenchyma
Ep	-	Epidermis
P	-	Parenchyma
Ph	-	Phloem
Xy	-	Xylem
Pi	-	Pith

FIGURE - II

F. T.S. of leaf - (Scale – L)

G. T.S. of midrib - (scale – K)

H. T.S. of lamino - (scale – K)

I. T.S. of Lamino - Spongy cells showing drugs (Scale – J)

J. K & L - Scales applicable to microphotographs

ABBREVIATIONS

Pa	-	Palisade tissue
Vb	-	Vascular bundle
Ep	-	Epidermis
Sp	-	Spongy tissue
Bs	-	Bundle sheath
St	-	Stomata
Dr	-	Druses of calcium oxalate crystals

INTRODUCTION

The revival of Indian system of medicine at the present day is one of the welcoming sign. The Siddha system of medicines dates back of several Countries. It has their our fundamental principles, anatomy, physiology, pharmaceuticals, surgery etc.

The field of medicine is progressing forward day by day and helps man to acquire new knowledge. Prevention and cure are the basic aims of all systems of medicine where as the Siddha system has in addition the transcendental motivation of what might be called the immortality of the body.

Life is not mere living but living with good health. The health of the individual is a primary concern to one and all. When requirements of food regimen is going decreases, nutritional deficiency manifestations like anaemia are flaring up.

Some of the persons seen with pale look and skinny appearance which are some land marks of undernourishment. In Siddha system it is called as Paandu noi. This is perhaps a major problem, not only our country but also the entire world is facing today.

Its symptoms like loss of appetite, tiredness, weakness, palpitations, giddiness, dyspnoea on mild exertion, anorexia.

Basically I interested in the well being of all humanbeings irrespective of their economic status. I have witnessed many patients in the outpatient department during my undergraduation who are the victims of Paandu noi and most of them are below the poverty line. This kindled a spirit in me carry out a work in Paandu noi and come out with a effective medicine of low cost effect.

Herbs are used as a special foods serving to a powerful nutritive impact on a weakened body. In an environment of dominating modern system of medicine, the traditional system of medicine with their predominant reliance on herbs have offered a viable alternative strategy with their relatively cheaper, safer. The herbal drugs are in great value in the treatment of diseases and research.

“Only healthy peoples can make a healthy India”

Saranaiver is mentioned in Siddha literature for so many diseases. It is also mentioned for Paandu noi in many literatures

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So, I have selected `Saranaiver chooranam’ for its haematinic activity and efficacy for Paandu noi as a rediscovery of what the siddhar’s said perhaps in the light of modern science.

AIM AND OBJECTIVES

AIM

To assess the efficacy of Saranaiver chooranam in the management of Paandu noi.

OBJECTIVES

- To identify the crude drug and to study the Pharmacognostic features which include macroscopic and microscopic details of the part used as medicine.
- To subject the drug to biochemical and phytochemical analysis
- To subject the antimicrobial activity of the drug
- The study of pharmacological activity of the drug
- Toevaluate the efficacy of the drug clinically.

GUNAPADAM ASPECT

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16. Ratha pitha Kudineer[13]

Ingredients

Chukku

Saranaiver

Method of Preparation

One part of the powdered drug to be boiled in eight parts of water and reduced to one by eight & should be used after decanting.

Dose

30 – 60 ml. Twice day

Therapeutic uses

Hemophilic condition (Ratha pitham)

17. Vairu vali Kudineer[13]

Ingredients

Murungai Kizhangu

Kazharchi ver

Saranaiver

Poondu

Kodiveli ver

Vasambu

Perungayam

Method of Preparation

One part of the powdered drug to be boiled in 8 parts of water & reduced to one by eight & should be used after decanting.

Dose

30-60 ml. Twice daily

Uses

Abdominal pain

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BOTANICAL ASPECT

Trianthema portulacastrum Linn.

Syn: Trianthema monogyna Linn.

Trianthema obcordata Roxb.

Classificaiton : Bentham & Hooker Classification[47]

Kingdom	-	Plant
Division	-	Angiosperms
Class	-	Dicotyledonae
Subclass	-	polypetalae
Series	-	calyci florae
Order	-	Ficoidales
Family	-	Ficoidaceae (Aizoaceae)
Genus	-	Trianthema
Species	-	Portulacastrum

VERNACULAR NAMES[1]

San	-	Shvetapunarnava, upothaki
Hindi	-	Svet – Sa – buni, lal – sabuni, santhi
Beng	-	Gadabani
Mar	-	Pundharighentuli
Tel	-	Ambatimadu
Tam	-	Shaaranai
Kan	-	Muchchugoni, Pasalaesoppu
Mal	-	Pasalikeera
Punjab	-	Bishkapra, itsit
English	-	Horse purslane [2]
Indochina	-	Sam

Investigations have shown that shvetapurnarnava is a species, belonging to the genus boerhaavia.

DISTRIBUTION [4]

A native of tropical America. Now naturalised throughout india as a weed in cultivated fields, river beds, and waste lands. It is very abundant during the rainy season.

DESCRIPTION OF THE PLANT[2]

It is a spreading, much branch, succulent, annual herb. Stems often tinged purplish.

LEAVES

Subfleshy , obliquely opposite, unequal, leaves are broader towards tip.

The upper one of the pair the larger, broadly obovate, rounded & often apicultate at the apex, cuneate at the base, glabrous. Flowers & Fruits are minute and concealed in the base of the leaf stalk and during the rainy seasons.

PETIOLES

6-13 mm long, much dialated and membranous at the base, especially those of the smaller leaves in which the membranous enlargement forms a triangular pouch.

FLOWERS

Solitary, sessile, pink

CALYX

Lobes ovate, acute

STAMENS

10-20

OVARY

Truncate

STYLE

One

SEEDS

Reniform, muriculate, dull black covered with minute outgrowth, kidney shaped.

CAPSULES

5 mm & 3 mm. Small almost concealed in the petiolar pouch, lid truncate, slightly concave with 2 spreading teeth, the upper part carrying away atleast one seed, the lower part 3-5 seeded.

PARTS USED

Root, leaves

VARIATION OF THE SPECIES[1]

There are 3 species available is trianthema

Stamens 10 or more

Style 1 – T. portulacastrum

Style 2 – T. decandra

Stamens less than 10

Style 2 – T. Pentandra

Adulterants

The seeds were found to be harmful contaminants in foodgrains and other agricultural seeds.

The plant is used as an adulterant of the roots of boerhaavia diffusa.

PHYTOCHEMISTRY

An analysis of the leafy vegetable from india gave the following values[1]

Moisture	-	91.3
Protein	-	2.0
Fat	-	0.4
Carbohydrate	-	3.2
Iron	**-**	**38.5**
Crude fibre	-	0.9
Ash	-	22 g
Calcium	-	100
Phosphorus	-	30
Ascorbic acid	-	70 mg/ 100 g of edible matter
Carotene	-	2.3 mg/ 100 g

The plant is rich in phosphorus and Iron but poor in calcium.

The plant also contain large amount of potassium nitrate – 2.64%.

It contains an alkoloid

- Trianthemine ($C_{32}H_{46}O_6N_2$ mp 127^o) & not punaranavine as earlier reported.

- L - Ecdysterone isolated. It is a potential chemo-sterilant[24].
- Ecdysterone which possesses moulting-hormone activity, gave a full pupation-response for larvae of housefly in a dose of 0.01 μg.

Powdered root contain[3]

- Saponin alkaloid
- Punarnavine upto 0.01 % calculated on air dry sample
- A new alkaloid $C_{32}H_{36}O_6N_2$.

ANALYTICAL DATA[48]

Identity, purity and strength

Foreign matter	-	Not more than	2%
Total ash	-	Not more than	11%
Acid-insoluble ash	-	Not more than	2%
Alcohol-Soluble extractive	-	Not less than	2%
Water-soluble extractive	-	Not less than	11%

Petroleum ether extract	2.03 (in % w/w)
Chloroform Extract	1.42 (in % w/w)
Ethanol Extract	1.908 (in % w/w)
Loss on Drying	6.22 (in % w/w)
Acid – Soluble Ash	9.58 (in % w/w)
Acid insoluble Ash	0.59 (in % w/w)
Sulphated ash	15.0 (in % w/w)
Total ash	10.18 (in % w/w)

TLC

TLC of alcoholic extract on silica gel 'G' Plate using Acetone: Water: Conc. Ammonia (90:78:3) shows under UV (366 mm) three conspicuous fluorescent zones at Rf. 0.20, 0.33 and 0.91 (all sky blue). On exposure to Iodine vapour one conspicuous spot appears at Rf. 0.11 (Yellow). On spraying with Dragendorff reagent one spot appears at Rf. 0.11 (Yellow).

Differences between the roots of Trianthema portulacastrum and boerhaavia diffusia (Microscopic)[48]

S.No.	Trianthema Portulacastrum	Boerhaavia diffusa
1.	Prismatic crystals of calcium oxalate	Raphides of calcium oxalate
2.	Starch grains absent	Simple and compound starch grains in secondary cortex
3.	Vessels scattered in thick walled, xylem fibres	Vessels arranged in radial groups

Various studies of Trianthema portulacastrum

- Indian Journal natural products, 1991; 7 (2) 3-8 antihepatotoxic activity of Trianthema portulacastrum ethanol extract of herb used; Acetone soluble fraction of extract is responsible for its action[25] .

- The ethanol extracts of the whole plant Trianthema portulacastrum Linn showed anti- pyretic activity against yeast pyrexia in rats. Analgesic against chemical & electrical stimuli, anti – inflammatory against induced arthritis in rats & CNS depressant properties.

(1984 MAPA 8401 – 0180)

- All parts of Trianthema Portulacastrum plant as well as the entire herb have reputation in curing different types of diseases but leaves excellent Diuretic properties.

(MAPA Volume 19 No 1997 9703 1413)

- A – C – methylflavone from Trianthema portulacastrum.

- Extraction of trianthema portulacastrum with dichloromethane has led to the isolation of a new flavonoid, 5, 2'- dihydroxy -7 – methoxy – 6, 8 – dimethyl flavone (C18 H1605, mp 257 degrees) along with 5,7 dihydroxy -6, 8- dimethyl chromone (Leptorumol) which has been previously reported from a fern species. X-ray analysis of Leptorumol is also reported.

(MAPA volume 19 NO 5 1997, 9705-3093)

- Restoration of antioxidant balance by Trianthema portulacastium in carbon tetrachloride induced hepatocellular injury in mice.

(MAPA Volume 20 No 3 1998, 9803 – 1545)

- Evaluation of hepatoprotective activity of Trianthema portulacastrum.

(MAPA – Volume 26 (3) June 2004, 1186)

- Inhibitory effect of Trianthema portulacastrum in diethylnitrosamine – Induced rat liver carcinogenesis (MAPA – volume 24 (1) Feb 2002, 0283)

- Hepatoprotective activity of Trianthema Portulacastrum against paracetamol and thioacetamide intoxicaton in albino rats.

(MAPA 2005 – 03 – 1243)

THERAPEUTIC USES & PROPERTIES

1. The Powdered root – bitter, cathartic, Abortifacient used in **amenorrhoea.**

2. The Leaves have medicinal properties which contain punarnavine alkaloid. It is to promote urination and useful in dropsy & kidney disease. It is particularly helpful in early stages of the diseases.

3. The leaves have diuretic, used in oedema, ascites. Decoction of herbs used as an antidote to alcohol poisoning. Also used in rheumatism & as a vermifuge.

4. It cures kapha, bronchitis, heart diseases, Inflammation, vatha, piles, asthma, obstruction of the liver.

5. It also cures **diseases of the blood, anaemia**[2]

6. Ethanolic extract of the plant has shown some effect on blood pressure of guinea pigs and also on their ileum.

7. The plants are sometimes used as fodder, fresh or dried. But they may cause poisoning in cattle.

8. The root applied to the eye, cures corneal ulcers, itching, dimness of sight, night blindness (Ayurveda)

9. The powdered bitter and nauseous root is given in combination with ginger as a cathartic.

10. The plant is used medicinally in Indochina & the Philippine islands. In the Philippine islands the powdered root is given as a cathartic.

11. Stomachic, useful in deranged functions of vata & sleshma. Finds application in **anaemia,** ascites, ulcers[22].

12. An infusion of roots is given internally (dose 1 – 20 ounces) in constipation, Jaundice, Strangury.

13. The whole plant has been tested for abortifacient properties. It does cause mild contraction of uterus[23]

PHARMACOGNOSTICAL STUDIES

MATERIALS AND METHODS

Microtone as well as hand section of roots, leaves & stem sections were taken and double stained. Standard methods of microscopy were applied.

Photomicrography was made at different magnifications depending upon the anatomical details to be brought out. Photomicrography was done on the heitz meopta research microscope using Asahi Pentax, 35 mm SLR spotmatic 11 camera and Kodak film.

MACROSCOPOIC CHARACTERS

ROOT

The root system consists of a tap root and several very narrow branching lateral roots. The outer surface of the root is light yellow and the cut surface has a cream white colour.

LEAVES

Leaves short petioled, obliquely opposite, unequal, one large and one small, the larger and smaller alternating at successive nodes, exstipulate but the bases of the petioles dilated into membraneous stipuliform margins that clasp the stem blade obovate to obcordate, fleshy, entire and vary with a reddish border; the smaller one narrow, oblong and tapering to the base rounded and often apiculate at apex. Petiole cave and winged.

MICROSCOPY

T.S. OF ROOT

Transverse section of young root is circular in outline. (Fig. 2A). Epidermis is single layered. Cortex is broad and composed of fairly large parenchyma cells, which surrounds the vascular stands. The cortex is lacunar at the periphery. (Fig. 2B).

The centre of the root is occupied by a strands of secondary xylem which in cross section appears like a dump bell with two primary xylem groups at the narrow middle part in the plane of its longer axis showing that the root is dearich. Two groups of primary phloem are found one on either side and in contact with the narrow central part at right angles to the plane of primary xylem but separated by secondary xylem. Narrow strips of secondary phloem occur outside the broader ends of this central xylem strand (Fig. 2B). In addition, there are also present two other smaller xylem strands located laterally in the concentric of the central dumbbell shaped strand one on either side but separated from the latter by a zone of parenchyma. Strips of phloem also occur in contact with and outside these two xylem groups.

In mature roots, surrounding the central vascular strand with two islands of phloem, three or more concentric bands of vascular tissue each composed of a border zone of xylem and a narrow zone of phloem can be made out. The xylem vessels are scattered. Alternating with the successive zone of vascular tissue, a few rows of parenchymatous cells forming narrow rings occur. Some cells contain aggregates of rhomboidal crystal. Cortex is narrow and lacinar at the periphery and composed of large oblong tangentially elongated thin walled cells. Crystals occur in the cortical cells also 3-4 rows of rectangular cells are found at the periphery. Distinct cork is not evident. A few uniseriate thick

walled medullary rays occur in the xylem and thin walled in the phloem and ground parenchyma.

T.S. OF STEM

Epidermis is single layered and made up of small rectangular cells. The cortex is narrow and made up of hexagonal – polygonal closely arranged parenchyma cells. The pericycle is represented by discontinuous ring of unlignified fibers and occur outside the vascular tissue.

The vasculater occur in the form of continuous cylinder around the central large pith (Fig. 2c) phloem is narrow. Xylem vessels are round and occur in radial multiples of 3-4.

The central pith is composed of thick walled parenchyma cells arranged with large triangular intercellular spaces. A few cortical and with parenchyma cells contain druses of calcium oxalate crystals (Fig. 2D.E).

T.S. OF LEAF

Leaf is dorsiventral in nature.

T.S. OF LAMINA

The adaxial epidermis is composed of large bladder like water storage cells intercalated between much smaller ones. (Fig. 3H). Both the epidermis are perforated by stomata. (Fig. 3F, H).

Mesophyll is differentiated in to palisade & spongy tissues palisade tissues are confirmed to the centre of the mesophyll especially around the veins. Occurrence of large bundle sheath surrounding the vascular bundles of the vein is a characteristic feature (Fig. 3, 4). Some of the spongy tissues contain druses of calcium oxalate crystals (Fig. 3I).

T.S. OF MIDRIB

It shows a small depression on the adaxial face and convexity on the abaxial face. There is a small vascular bundle in the centre and surrounded by a bundle sheath. (Fig. 3G). The ground tissue is composed of variously shaped closely arranged thin walled parenchyma cells. Some cells contain druses of calcium oxalate crystals.

POWDER

Light yellow; shows groups of xylem vessels with pitted thickening, thick-walled xylem fibres and cells with a few prismatic crystals of calcium oxalate.

MATERIALS & METHODS

Collection of the drug

The root of Trianthema portulacastrum was collected from a herbal cultivator of Gobichettipalayam. It was identified by Botanist CRRI, Arumbakkam, Chennai-106.

Purification of the raw drug

The dust particles and foreign matter were removed.

Preparation of the drug[12]

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Purification of Chooranam

The chooranam was then purified by steam cooking in milk. Then the Powder was dried & sieved again.

Storage of Chooranam:

Chooranam was stored in an airtight container and used within 3 months.

Form of the drug	Route of administration	Dose	Vehicle	Time of administration
Chooranam	Enteral	1 gm	Palm jaggery	Twice a day after food

Saranaiver Chooranam was subjected to:

- Biochemical analysis
- Anti – microbial study
- Pharmacological study
- Clinical assessment

PRELIMINARY ACID / BASIC RADICALS AND PHYTOCHEMICAL SCREENING IN TEST DRUG (C.L. BAID METHA COLLEGE OF PHARMACY) THORAPPAKKAM, CHENNAI – 600 096

Preparation of extract

5 gm of saranai ver chooranam is weighed accurately and placed in a 250 ml clean beaker and added with 50 ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100 ml volumetric flask and made upto 100 ml with distilled water.

TEST FOR ACID RADICALS

Test for oxalate

5 drops of clear solution is added with 2 ml of dilute sulphuric acid and slightly warmed. To this, 1 ml of dilute potassium permanganate solution is added. Potassium permanganate solution is decolourised. It indicates the presence of oxalate.

Test for Chloride

2 ml of Sodium carbonate extract is added with dilute nitric acid till the effervescence ceases. Then 2 ml of silver nitrate solution is added. Cloudy white precipitate completely soluble in excess of ammonium hydroxide solution is obtained. It indicates the presence of chloride.

Test for phosphate

The extract is treated with ammonium molybdate and conc. HNO_3. Yellow precipitate indicates the presence of phosphate.

Test for carbonate

The substance is treated with conc. HCl. Effervescence shows the presence of carbonate.

TEST FOR BASIC RADICALS

Test for Ferrous Iron

2 ml of extract is treated with Conc. HNO_3 and ammouium thiocynate. Blood red colour indicates the presence of ferrous iron.

TEST FOR PHYTO CHEMICAL CONSTITUENTS

Test for starch

2 ml of extract is treated with weak iodine Solution. Blue colour shows the presence of starch.

Test for steroids

Liberman Burchard test

2 ml of extract is treated with 2 ml acetic anhydride and conc. Sulphuric acid. Formation of red colour indicates the presence of steroids.

Test for saponins

Dilute extract + 1 ml of distilled water, shake well. Froth formation indicates the presence of saponins.

Test for Tannic acid

The extract is treated with ferric chloride. Blue black precipitate shows the presence of tannic acid.

Test for protein

Biuret Method

1 ml dilute extract + 1 ml of 5 % copper sulphate + 1% sodium hydroxide. Formation of violet colour indicates the presence of protein.

Test for Tannins

Dilute extract + 2ml of 10% lead acetate add. White precipitate shows the presence of Tannins.

Test for phenols

Dilute extract + 2 drops of FeCl3 solution. Deep green colour shows the presence of phenols.

Test for Flavanoids

Dilute extract + magnesium bits + 2 drops of conc. HCl and gently heated. Formation of pink colour indicates the presence of flavanoids.

Test for amino acids

Dilute extract + 2 ml of Ninhydrin's solution. Formation of violet colour indicates the presence of amino acids.

Test for alkaloids

2 ml of extract is treated with 2 ml of picric acid. Yellow colour shows the presence of alkaloids.

Test for Glycosides

A few mg of the substance is mixed with an equal quantity of anthrone and treated with two drops of concentrate sulfuric acid, heated gently on a water bath if necessary. Green dark colour indicates the presence of Glycosides.

RESULTS

Acid Radicals

Oxalate, Chloride, Phosphate, Carbonate.

Basic Radicals

Ferrous Iron

Phyto chemical Constituents

Starch, steroids, Saponin, Tannic acid, Protein, Tannin, Phenol, Flavanoids, amino acids, alkaloids, Glycosides.

ANTI MICROBIAL STUDY

The extract of **“Saranaiver chooranam”** was tested with following micro organisms.

- Staphylococcus aureus
- Escherichia coli
- Klebsiella pneumoniae
- Proteus vulgaris
- Pseudomonas aureginosa
- Candida albicans

The tube diluation method was used as a homogenous dispersion of the drug is more effective to test the antimicrobial activity of the drug. Dilution method in used in the preliminary screening of the antimicrobial activity.

To 10 ml of nutrient broth culture 0.5 ml of the extract was added and the tubes were incubated at 37^{o}C over night. The next day the tubes were examined for turbidity and subcultures were made on nutrient agar plates. Control tubes without drug were also incubated.

The plates were incubated overnight at 37^{o}C and the readings were taken on the next day.

RESULTS

The antimicrobical study of saranaiver chooranam shows the following results.

S.No.	ORGANISM	SENSITIVITY
1	Staphylococcus aureus	Highly sensitivity
2	Escherichia coli	Highly sensitivity
3	Klebsiella pneumoniae	Highly sensitivity
4	Proteus vulgaris	Highly sensitivity
5	Pseudomonas aureginosa	Highly sensitivity
6	Candida albicans	Highly sensitivity

PHARMACOLOGICAL STUDY

MATERIALS AND METHODS

Test Drug

The following medicinal plant was used in the study was collected and processed by the method prescribed in standard text book of siddha medicines.

Saranai ver chooranam

SVC was prepared by the method described in Agathiar vaidhya cinthamani venba 4000 - part I. Page no.180.

Preparation of drug for dosing

The drug used for the study was suspended each time with 1% (w/v) solution of sodium carboxy methyl cellulose before administration.

Drugs and chemicals

Fine chemicals used in these experiments were obtained from Sigma Chemicals company, U.S.A . Other analytical grade chemicals were obtained from S.d. Fine Chemicals Ltd., Mumbai.

Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 – 250 g were used for the pharmacological studies and swiss albino mice of single sex weighing 20-25g were used for toxicological studies. The animals were kept under standard conditions 12:12 (day / night cycles) at 22^{o} C room temperature in polypropylene cages. The animals were fed on standard pelleted diet (Hindustan Lever Pvt Ltd. Bangalore) and tap water *ad libitum*. The animals were housed for one week in polypropylene cages prior to the experiments to acclimatize to laboratory conditions. The experimental protocol was approved by the Institutional Animal Ethical Committee (IAEC).

ACUTE ORAL TOXICITY STUDY

Acute oral toxicity was conducted as per the OECD guidelines (Organization of Economic Cooperation and Development) 423 (Acute Toxic Class Method). The acute toxic class method is a stepwise procedure with 3 animals of a single sex per step. Depending on the mortality and / or moribund status of the animals, on the average 2-4 steps may be necessary to allow judgement on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data based scientific conclusion.

The method uses defined doses (5,50,300,2000 mg/kg body weigh) and the results allow a subtance to be ranked and classified according to the Globally Harmonized System (GHS) for the classification of chemicals which cause acute toxicity.

EXPERIMENTAL PROCEDURE

Male swiss albino mice weighing 20-25 g were used for the study. The starting dose level of saranaiver chooranam was 2000 mg / kg body weight (per oral). As most of the crude extracts posses LD 50 value more than 2000 mg / kg / p.o. Food was withheld for a further 3 to 4 hours after administration and observed closely for behavioural toxicity. Body weight of the mice before and after administration were noted.

RESULT FOR ACUTE ORAL TOXICITY STUDY

Parameters	1 Hr	2 Hr	3 Hr	4Hr	8H	24 Hr
Appearance	N	N	N	N	N	N
Activity	+	+	+	++	++	+++
GAIT	N	N	N	N	N	N
Reaction to stimulus						
a.Sound	P	P	P	P	P	P
b.Touch	P	P	P	P	P	P
c.Light	P	P	P	P	P	P
Lacrimation	A	A	A	A	A	A
Salivation	A	A	A	A	A	A
Pilo erection	A	A	A	A	A	A
Stimulant	A	A	A	A	A	A
Depressant	A	A	A	A	A	A
Defecation	A	A	A	A	A	A
Rearing	A	A	A	A	A	A
Licking of paw	A	A	A	A	A	A
Convulsions	A	A	A	A	A	A

N - Normal

P - Present

A - Absent

\+ - Present minimum

++ - Present medium

+++ - Present maximum

++++ - Highly observable

Saranaiver chooranam at the dose of 2000mg/ kg/p.o did not exhibit any mortality in mice. As per OECD 423 guidelines the dose is said to be “unclassified” under the toxicity scale. Hence further study with higher doses was not executed.

STUDY ON THE HAEMATINIC EFFECT OF SARANAI VER CHOORNAM

Adult wistar rats of either sex weighing 200-250 g were taken.

12-16 hrs before the experiment began the rats were fasted but water was made available *ad libitum*. The blood was taken from retro orbital puncture. The initial blood parameters were noted.

The animals were randomly divided into 3 groups. Each group having six rats.

Group I served as the control group and was orally given 10 ml / kg body weight of distilled water.

Group II served as the standard group and was orally given fefol capsule.

Group III served as the test group and was administered the test drug saranaiver chooranam at the dose of 500mg / kg body weight for 15 days and results were tabulated.

RESULT

Effect of Saranaiver chooranam on Haematological parameters after 15 days repeated oral dosing (500 mg /kg)

Table 1

Groups	Hb (gm/100ml)	RBC millions/cu.mm)	WBC (cells/cu.mm)
Control	9.5 ± 1.612	3.15 ± 0.552	5623.33 ± 2.78
SVC (500mg/kg. p.o.)	12.433 ± 1.539**	4.15 ± 0.511 **	5682.00 ± 3.01ns
Standard (fefol 5mg /kg/p.o.)	13.5 ± 0.862	6.562 ±0.962	8.537.00 ± 3.05

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

**P<0.004 as compared with that of control

ns – non significant when compared to control

Table 2

Groups	PCV %	MCV (cubic microns)	MCH (Pg)
Control	28.55 ± 4.837	90.53 ± 0.827	30.23 ± 0.225
SVC (500mg/kg. p.o.,)	37.3 ± 4.619**	89.83 ± 0.136ns	30.06 ± 0.106ns
Standard (fefol 5mg /kg/p.o.)	51.3 ± 3.23	110.95 ±0.927	37.52 ± 2.72

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

***P<0.004 as compared with that of control.

ns – non significant when compared to control

Table 1 & 2 depicts the effect of SVC on Haematological parameters. SVC increased the Hb%, RBC, WBC, PCV in rats treated for 15 days.

CLINICAL STUDY

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ENROLLMENT AND METHOD OF STUDY

Clinical study was carried out in Gunapadam post graduate out patient department Aringnar Anna Govt. Hospital of Indian Medicine, Chennai. Laboratory findings were done in A.A.G.H.I.M. and other private Laboratories.

Efficacy follow up was taken at the end of therapy for recording clinical and lab parameters which were subjected to statistical analysis at the end of the study.

During course of treatment patients were advised to reports immediately when they get acute symptoms and contra indications.

SELECTION OF PATIENTS

40 Cases were selected for clinical trial on the basis of including criteria. Cases from both sexes of varying age groups were selected and studied under the guidance of the HOD, Lecturers, Assistant Lecturers of the post graduate Gunapadam Department.

CRITERIA FOR SELECTION

INCLUSION

- Loss of appetite
- Tiredness
- Pallorness of skin, tongue, conjunctiva and nail beds
- Patients having haemoglobin level 7 – 10 gm/ dl

EXCLUSION

- Haemorrhoids
- Haematuria
- Haemoptysis
- Endocrine disorders
- Worm infestation

WITHDRAWL CRITERIA

- Irregular medication
- Patients who followed dual treatment

LINE OF TREATMENT:

Saranaiver Chooranam	:	1 gm BD with Palmjaggery.
Route of administration	:	Enteral
Duration of treatment	:	48 days.

Investigation Parameters:

Before treatment a detailed clinical history was taken by regarding the history of present and past illness, personal history, menstrual history and associated history such as occupation, socio-economical status etc.

The presence of anaemia was confirmed in all patients by means of blood picture (TC, DC, ESR, Hb%) urine analysis for albumin, sugar, deposits and stools examination for ova, cyst, occult blood ruled out for any systemic illness.

Medical Advice and Diet:

Patients were advised,

- To intake cereals, milk, lettuce, tomato, beans, raisins, apricots, almonds, walnuts, cauliflower, radish, pomegranate regularly.
- To intake mutton, liver, kidney, brain, egg yolk, oysters and fishes also.
- To intake rich sources of Vitamin ‘C’ like citrus fruits, which promotes iron absorbtion.
- In severe cases with anorexia only Kanji and soup are advised.
- Daily consumption of dates supports the therapy.
- Karisalai, Ponnanganni, Manathakali, Arukirai like iron rich greens are preferred in daily diet.

In clinical trial,

Results were observed with respect to the following criteria.

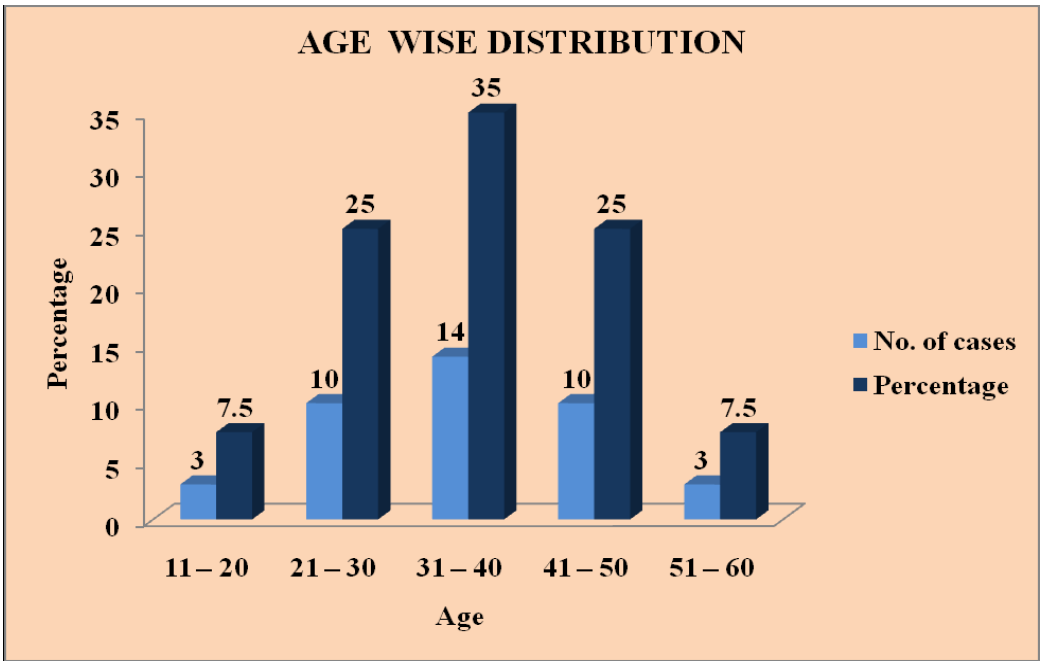
- Age
- Sex
- Etiology
- Socio-economic status
- Personal habits and diets
- Clinical features

AGEWISE DISTRIBUTION

Total number of cases seen – 40

Sl.No.	Age	No. of cases	Percentage (%)
1.	11 – 20	3	7.5
2.	21 – 30	10	25
3.	31 – 40	14	35
4.	41 – 50	10	25
5.	51 – 60	3	7.5

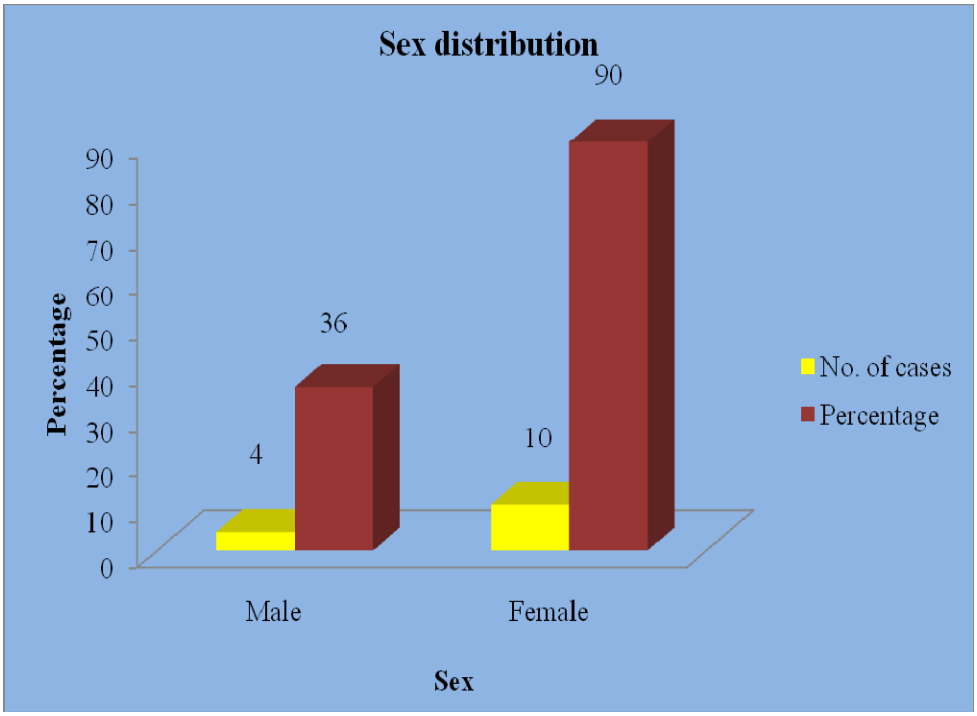
The age table shows that Paandu noi is common in all age groups.



SEX DISTRIBUTION

Sl.No.	Sex	No. of cases	Percentage (%)
1.	Male	4	10
2.	Female	36	90

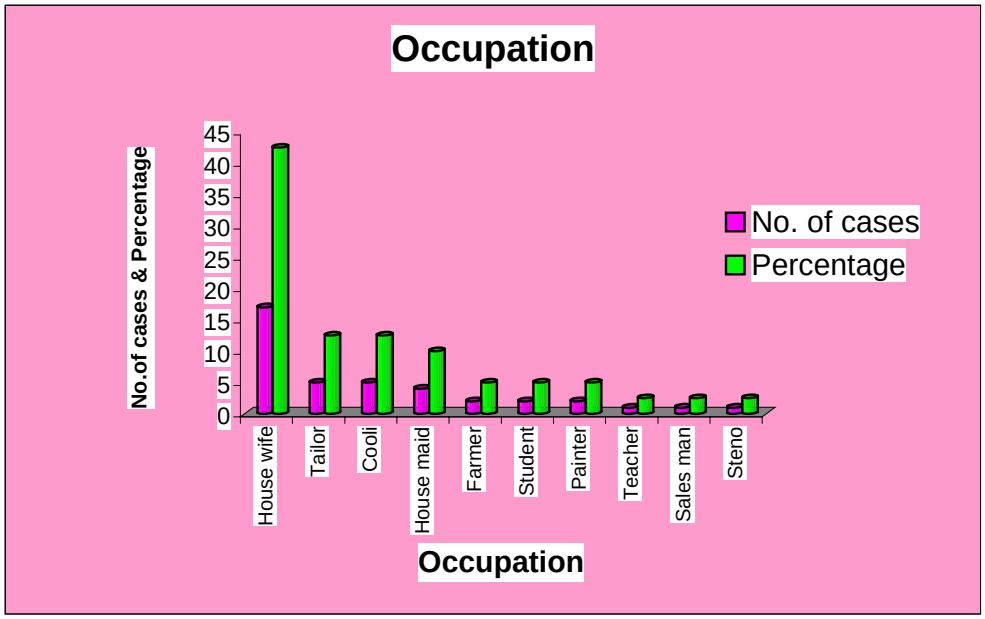
The sex distribution table shows that females are more prone to Paandu noi.



OCCUPATION

Sl.No.	Occupation	No. of cases	Percentage (%)
1.	House wife	17	42.5
2.	Tailor	5	12.5
3.	Cooli	5	12.5
4.	House maid	4	10
5.	Farmer	2	5
6.	Student	2	5
7.	Painter	2	5
8.	Teacher	1	2.5
9.	Sales man	1	2.5
10.	Steno	1	2.5

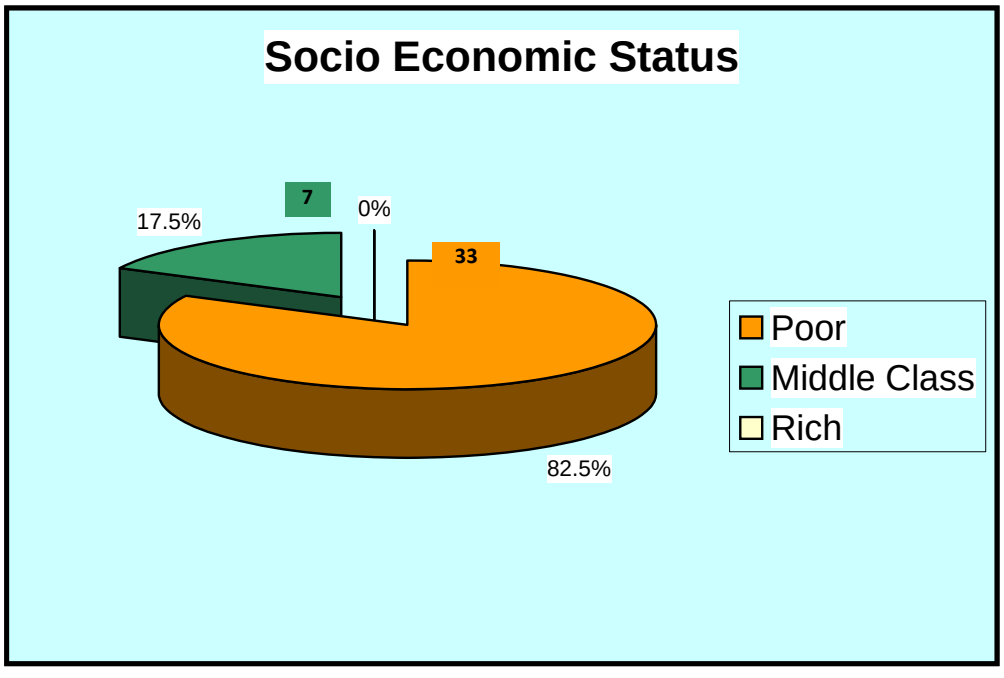
Among 40 patients 17 house wife (42.5%), 5 Tailor (12.5%), 5 cooli (12.5%), 4 house maid (10%), 2 Farmer (5%), 2 student (5%), 2 Painter (5%), 1 Teacher (2.5%), 1 Sales man (2.5%), 1 steno (2.5%).



SOCIO – ECONOMIC STATUS

Sl.No.	Status	No. of cases	Percentage (%)
1.	Poor	33	82.5
2.	Middle Class	7	17.5
3.	Rich	0	0

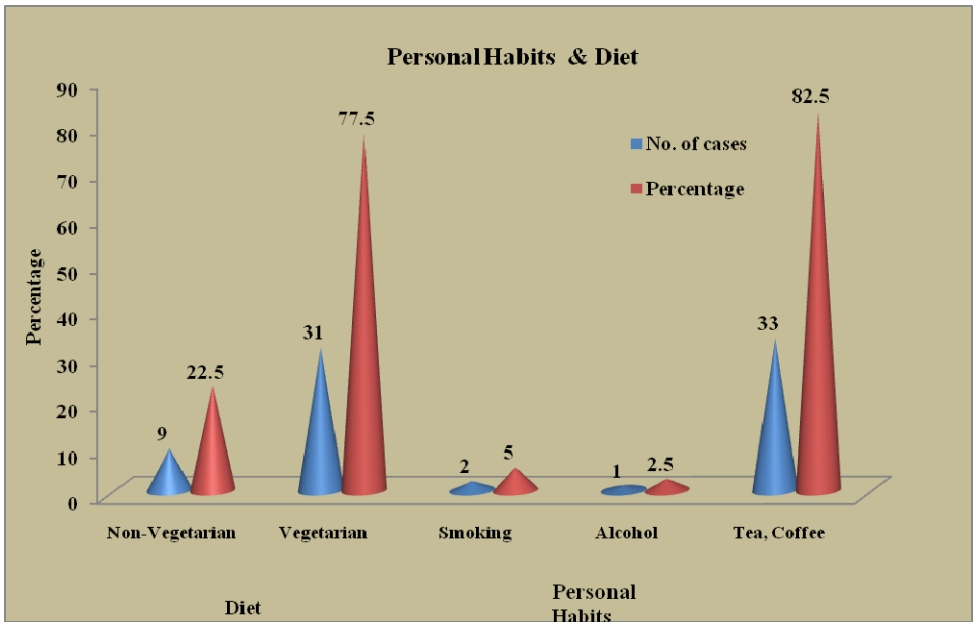
The table of Socio-economical status shows the maximum incidence of Paandu noi were observed in poor people.



PERSONAL HABITS & DIET

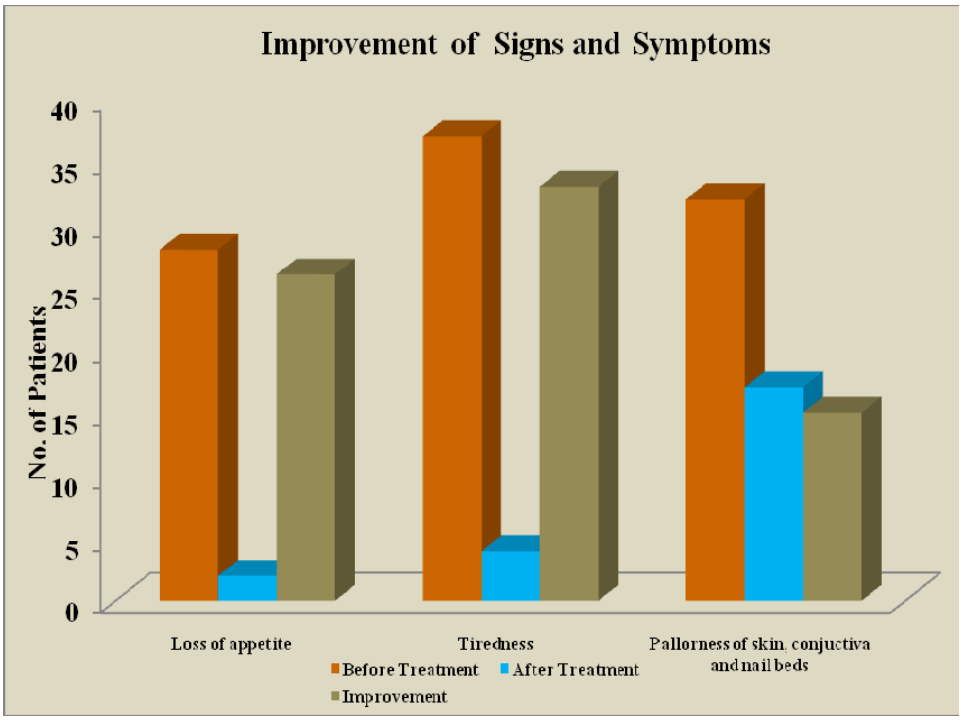
Sl.No.	Habit & Diet	No. of cases	Percentage (%)
1.	Non-Vegetarian	9	22.5
2.	Vegetarian	31	77.5
3.	Smoking	2	5
4.	Alcohol	1	2.5
5.	Tea, Coffee	33	82.5

From the table Paandu noi is more common in vegetarian peoples. Tea, coffee drinking peoples are more prone to Paandu noi.



IMPROVEMENT OF OF SIGNS AND SYMPTOMS

S.No.	Sign and symptoms	Before Treatment	After Treatment	Improvement	Percentage (%)
1.	Loss of appetite	28	2	26	92
2.	Tiredness	37	4	33	89
3.	Pallorness of skin, tongue conjuctiva and nail beds	32	17	15	46



Inference

Patients with the parameters that is loss of appetite, tiredness, pallorness of skin, tongue, conjuctiva and nail beds were taken for the study.

Among 40 patients, 28 patients were having loss of appetite and 26 were improved after treatment .

37 patients were having tiredness and 33 were improved after treatment.

32 patients were having pallorness of skin, tongue, conjuctiva and nail beds. 15 patients were improved after treatment.

GRADATION OF RESULT

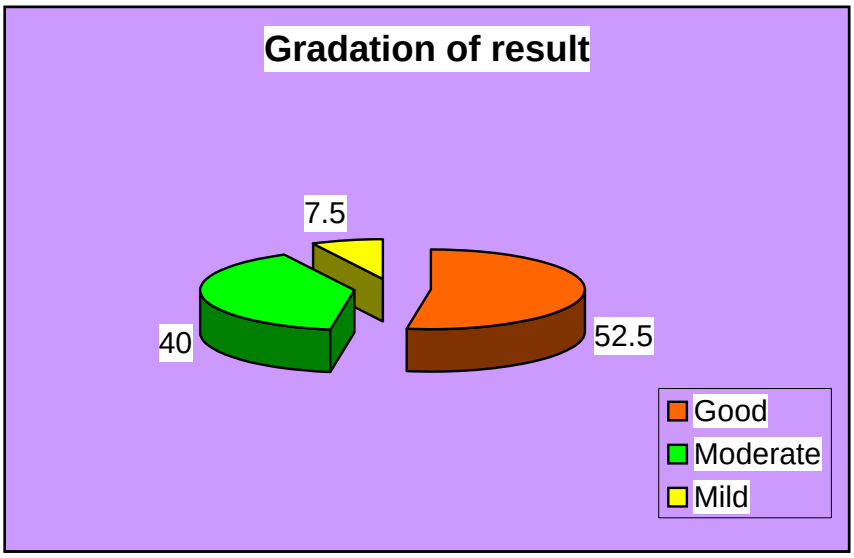
Sl.No.	Grade	No. of patients	Percentage (%)
1	Good	21	52.5%
2	Moderate	16	40%
3	Mild	3	7.5%

Inference

Among the 40 cases, 52.5% of cases showed good results, 40% of cases showed moderate results and 7.5% of cases showed mild results.

Development of good appetite and reduction of pallor and tiredness was considered as good results.

Improvement in 2 symptoms was considered as moderate. Improvement in 1 symptom was considered as mild result.



Methodology for statistical analysis

The paired `t' is used for the analysis of paired data. The observed difference in each pair is calculated. The `t' is determined by the following formula.

$$t = \frac{\bar{d}}{\sqrt{\frac{S^2}{n}}}$$

where $\bar{d}$ is the mean of the differences in each pair. S is the standard deviation of the observed differences and n is the number of matched pairs. The number of degrees of freedom is (n-1).

$$\bar{d} = \frac{\Sigma d}{n}$$

$$\bar{d} = \frac{74}{40} = 1.85$$

$$S^2 = \frac{\Sigma d^2 - \frac{(\Sigma d)^2}{n}}{n-1}$$

$$= \frac{142 - \frac{5959}{40}}{40 - 1}$$

$$= \frac{142 - 149}{39}$$

$$S^2 = 0.179$$

$$t = \frac{\bar{d}}{\sqrt{\frac{S^2}{n}}}$$

$$t = \frac{1.85}{\sqrt{\frac{0.179}{40}}}$$

$$t = \frac{1.85}{\sqrt{0.004475}}$$

$$t = \frac{1.85}{0.423}$$

$$t = 4.373$$

$t = 4.373$ at 39 degrees of freedom $p < 0.001$

Therefore SVC has brought about statistically highly significant increase in Hb content.

Statistical analysis of subjective parameters observed before and after treatment of patients

Parameters	Percentage			Statistical test criteria	Probability test criteria	Significance
	Before Treatment	After Treatment	Difference			
Loss of appetite	28.0 ± 7.1554	26.0 ± 5.3666	2.0± 0.8944	19.170	p < 0.001	Significant
Tiredness	37.0 ± 4.4721	33.0 ± 2.6833	4.00±1.7889	20.066	p < 0.001	Significant
Pallorness of conjuctiva, tongue, nail beds	32.0± 3.5777	17.0±1.7886	15.0 ± 0.012	21.909	p < 0.001	Significant

n = 40; values are expressed as mean ± S.D. followed by student one sample `t' test.

p<0001 hence the improvement in the subjective parameters produced by Saranaiver chooranam is statistically significant.

DISCUSSION

Paandu noi is one of the most common and widespread disease.

In the siddha literacy survey of medicines, which are given for Paandu noi, saranaiver is one of the major ingredients of them.

Saranaiver chooranam was subjected to Biochemical and phytochemical analysis, Quantitative analysis, Anti microbial study, Acute toxicity study, pharmacological activity and clinical study.

Bio chemical analysis of Saranaiver chooranam showed that the presence of oxalate, chloride, phosphate, Carbonate, ferrous iron.

Ferrous iron – In this form, Iron is more soluble and therefore more readily absorbed.

Atomic absortion spectrometery (AAS) showed Saranaiver Chooranam Contain 472mg/kg iron. It also reveals that, saranaiver contains iron which is the major element for treating nutritional deficiency in Paandu noi.

Phyto chemical screening of saranaiver chooranam showed starch, steriod, Saponin, Tannic acid, protein, Tannin, Phenol, Flavanoid, Aminoacid, Alkaloid, Glycosides.

- Starch, protein, Glycosides – have high Nutritional values.
- Steroid, phenol, flavanoid – acts as an antioxident.[44]
- Tannin, Tannic acid – are astrigents. Its improve the blood.

Anti microbial analysis showed saranaiver is highly sensitvity aganist staphylococcus aureus, E. coli, Klebsiella Pneumoniae, Proteus vulgaris, Pseudomonas aureginosa, Candida albicans.

In the Acute toxicity study, the drug showed no acute toxicity upto 2000 mg / kg / p.o.

Saranaiver is a good haematinic, which increases the haemoglobin content of blood, thus useful in treating Paandu noi.

As per wealth of India, Saranaiver is rich in iron. Also Saranaiver is well known for its laxative action. Usually iron therapy induces constipation, But while treating with Saranaver chooranam this problem didn't arise.

The results of the clinical study reveals that Paandu noi is common in all age groups.

Regarding sex-the ratio of female patients were more.

Personal habits and dietary intake also had some influence on the disease. Paandu noi is more common in vegetarian diet peoples persons those who had the habit of drinking coffee, tea were prone to this clinical entity.

People of economically backward classes are more affected by Paandu noi than middle or upper classs people due to their poor diet.

Saranaiver chooranam was given for 48 days, at the dose of 1gm, twice daily with Palm jaggery for 40 patients.

Among 28 patients, who had loss of appetite, before treatment, improved 92%

Among 37 patients, who had tirendness before treatment, improved 89%.

Among 32 patients, who had pallorness of skin, tongue, conjuctiva and nail beds before treatment, improved 46%

In the gradation of results, 52.5% of cases showed good results. 40% of cases showed moderate results and 7.5% of cases showed mild results.

The Hb % was raised moderately after treatment.

This shows saranaiver Chooranam have moderate results in improving blood Hb level.

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SUMMARY

Saranaiver is one of the commonly used herbal drug in Indian system of medicine.

As per wealth of India, it is rich in iron.

Biochemical analysis and quantitative studies reveals the presence of chloride, phosphate, ferrous iron. The presence of above elements helps for the treatment of Paandu noi. Phytochemical analysis showed the presence of Tannic acid, Tannin. It improves the blood.

Pharmacological studies of 15 days administration of saranaiver chooranam in albino rats, produced significant and dose related augumentation of the haemoglobin level compared with fefol. No acute toxicity upto 2000 mg / kg / p.o.

As per Siddha literatures it is useful for treating Paandu noi which is proved by the above clinical and pharmacological study.

CONCLUSION

- ☞ Preparation of saranaiver chooranam is easy and also very economically.
- ☞ It is easily available in raw drug shop.
- ☞ Toxicity study shows the safety of the drug
- ☞ Chemical analysis shows the presence of ferrous iron
- ☞ No Contra indication was noted. Clinical study has been concluded that saranaiver chooranam is found to be an effective drug for Paandu noi.
- ☞ This establishes the potency and safety of the selected study drug and can be recommended as a safe natural herbal drug for Paandu noi.

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OBSERVATION AND RESULTS
CLINICAL STUDY ON `SARANAIVER CHOORANAM ' IN THE MANAGEMENT OF `PAANDU NOI'

Sl No.	OP No.	Name Age/sex	Occupation	Complaints		Duration	Investigation																Remarks
							BT/ AT	Blood										Urine			Motion		
								TC cells/ cu.mm	DC [%]			ESR		Hb (gm)	S(R) (mg %)	Ur (mg %)	S.ch (mg %)	A	S	Dep	O &C	occ B	
				B.T	A.T				P	L	E	½ hr	1h										
1	3188	Mahalakshmi 23/F	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds	Pallor of tongue, nail beds	1.12.07 to 31.1.08	BT	8800	51	45	4	5	12	8	72	17	147	Nil	Nil	OEC	Nil	Nil	Moderate
							AT	9000	52	45	3	6	12	10.5	90	18	150	Nil	Nil	OEC	Nil	Nil	
2	3640	Duraiswamy 40/M	Farmer	Tiredness, pallor of tongue, nail beds	Nil	3.12.07 to 31.1.08	BT	9000	16	33	7	10	20	9	170	26	160	Nil	Nil	FPC	Nil	Nil	Good
							AT	9000	60	35	5	10	22	12	140	23	148	Nil	Nil	OEC	Nil	Nil	
3	4172	Kalpana 26/F	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Tiredness	4.12.07 to 4.2.08	BT	9000	52	43	5	15	34	9	103	17	153	Nil	Nil	FPC	Nil	Nil	Moderate
							AT	9400	57	36	7	11	25	10	92	18	160	Nil	Nil	OEC	Nil	Nil	
4	4233	Lakhsmi 37/f	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	4.12.07 to 22.1.08	BT	10800	64	32	4	20	38	9	130	26	175	Nil	Nil	FPC	Nil	Nil	Moderate
							AT	10600	65	33	2	13	32	10.5	132	22	159	Nil	Nil	FPC	Nil	Nil	
5	4593	Muniammal 49/F	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	5.12.07 to 22.1.08	BT	8900	54	40	6	15	82	8	95	26	200	Nil	Nil	OPC	Nil	Nil	Moderate
							AT	9100	54	42	4	11	25	10	88	19	187	Nil	Nil	OPC	Nil	Nil	
6	5215	Indira 48/F	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	7.12.07 to 31.1.08	BT	10400	63	31	6	40	84	9	120	20	185	Nil	Nil	FEC	Nil	Nil	Moderate
							AT	9000	53	41	6	24	40	10.5	135	24	192	Nil	Nil	OPC	Nil	Nil	
7	6681	Shanthi 45/F	Tailor	Loss of appetite, tiredness	Nil	11.12.07 to 31.1.08	BT	9200	55	41	4	11	20	9	99	19	177	Nil	Nil	OEC	Nil	Nil	Good
							AT	9300	54	42	4	13	30	10	111	23	160	Nil	Nil	OEC	Nil	Nil	

8	6639	Rajeswari 27/F	H.Wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Tiredness, pallor of tongue, nail beds, conjuctiva	11.12.07 to 31.1.08	BT	8200	52	40	8	24	40	8.5	140	19	217	Nil	Nil	FPC	Nil	Nil	Mild
							AT	8200	52	45	3	20	35	10	120	20	210	Nil	Nil	FEC	Nil	Nil	
9	6582	Jayanthi 42/F	Tailor	Tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	11.12.07 to 17.2.08	BT	9200	58	35	7	20	42	8	98	36	148	Nil	Nil	FEC	Nil	Nil	Mode rate
							AT	9300	60	35	5	20	40	10	104	21	150	Nil	Nil	FEC	Nil	Nil	
10	6992	Devaki 43/F	Flower mercht	Loss of appetite, tiredness	Nil	12.12.07 to 8.2.08	BT	8700	52	44	4	20	44	9	91	27	192	Nil	Nil	FEC	Nil	Nil	Good
							AT	8600	52	44	4	11	27	10.5	110	19	160	Nil	Nil	FEC	Nil	Nil	
11	7074	Ponammal 32/F	Farmer	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Nil	12.12.07 to 8.2.08	BT	9800	55	36	9	5	11	9	18	18	167	Nil	Nil	OPC	Nil	Nil	Good
							AT	9700	54	38	8	5	12	11	120	20	148	Nil	Nil	OPC	Nil	Nil	
12	7265	Muniamma 25/F	Pap mil worker	Loss of appetite, tiredness, pallor of nail beds, conjuctiva	Nil	13.12.07 to 2.2.08	BT	9400	58	35	7	20	44	9	89	19	166	Nil	Nil	FEC	Nil	Nil	Good
							AT	9400	58	37	5	20	42	12	82	19	194	Nil	Nil	FEC	Nil	Nil	
13	7688	Mumtaj 35/F	H.wife	Tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	14.12.07 to 14.2.08	BT	9500	57	36	7	12	20	8.5	80	19	182	Nil	Nil	FPC	Nil	Nil	Mode rate
							AT	10000	57	36	7	24	40	11	88	21	172	Nil	Nil	FEC	Nil	Nil	
14	7834	Malika 51/F	H.wife	Loss of appetite, tiredness	Nil	14.12.07 to 4.2.08	BT	9800	62	30	8	20	38	9	180	28	192	Nil	Nil	OEC	Nil	Nil	Good
							AT	9800	60	37	6	22	30	11	169	26	190	Nil	Nil	OEC	Nil	Nil	
15	7839	Vijaya kumari 18/F	Con. worker	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Nil	14.12.07 to 5.2.08	BT	9800	57	38	5	12	20	9	70	16	147	Nil	Nil	FEC	Nil	Nil	Good
							AT	9500	56	41	3	12	38	10.5	88	15	160	Nil	Nil	FEC	Nil	Nil	
16	8281	Arputham 20/F	Tailor	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Nil	15.12.07 to 16.2.08	BT	9000	60	33	7	11	22	8.3	98	20	168	Nil	Nil	OEC	Nil	Nil	Good
							AT	9100	60	35	5	12	25	10.5	96	21	170	Nil	Nil	FEC	Nil	Nil	

17	9865	Nirancha na devi 26/F	Stude nt	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Nil	21.12.07 to 22.2.08	BT	9700	52	46	2	15	34	8.9	89	23	156	Nil	Nil	FPC	Nil	Nil Nil	Good
							AT	9800	54	42	4	11	25	11	100	20	160	Nil	Nil	FPC	Nil		
18	9952	Devaraj 56/M	Paint er	Tiredness, pallor of tongue, nail beds, conjuctiva	Nil	21.12.07 to 15.1.08	BT	9800	59	35	6	5	12	9	82	21	162	Nil	Nil	FEC	Nil	Nil	Good
							AT	9700	52	45	3	6	12	11	100	22	180	Nil	Nil	FEC	Nil	Nil	
19	2078	Shanthi 43/F	H. wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	27.12.07 to 27.2.08	BT	9600	63	31	6	15	32	9.6	108	23	189	Nil	Nil	FPC	Nil	Nil	Modera te
							AT	9400	64	32	4	20	38	11	100	24	188	Nil	Nil	FEC	Nil	Nil	
20	2412	Chell ammal 54/F	H.wif e	Tiredness	Nil	28.12.07 to 28.2.08	BT	10300	51	46	3	11	20	9.5	89	24	220	Nil	Nil	FEC	Nil	Nil	Good
							AT	10000	52	46	2	13	25	10.5	85	20	198	Nil	Nil	FEC	Nil	Nil	
21	4184	Karpagam 34/F	H. wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Loss of appetite, pallor of tongue, nail beds, conjuctiva	3.1.08 to 26.2.08	BT	9800	60	34	6	24	40	9.5	82	21	179	Nil	Nil	OPC	Nil	Nil	Mild
							AT	9900	63	31	6	20	40	11	85	19	182	Nil	Nil	OPC	Nil	Nil	
22	6241	Selvarani 40/F	Cook	Loss of appetite, pallor of nail beds, conjuctiva	Nil	9.1.08 to 27.2.08	BT	9900	55	36	9	10	20	9	120	27	190	Nil	Nil	FEC	Nil	Nil	Good
							AT	10800	66	29	5	12	20	10.5	110	24	172	Nil	Nil	FEC	Nil	Nil	
23	6979	Rani 40/F	Merc ht	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	11.1.08 to 9.3.08	BT	7500	53	41	6	50	85	7	130	21	190	Nil	Nil	FPC	Nil	Nil	Modera te
							AT	8000	52	46	2	40	80	9.5	110	22	189	Nil	Nil	FPC	Nil	Nil	
24	4910	Amudha 28/F	Tailor	Tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	15.1.08 to 25.3.08	BT	9000	51	46	3	11	20	8.5	88	19	187	Nil	Nil	FPC	Nil	Nil	Modera te
							AT	9800	60	34	6	22	30	10	19	22	185	Nil	Nil	FEC	Nil	Nil	
25	2410	Pushpara	H.wif	Loss of appetite,	Loss of	29.1.08	BT	9600	60	36	4	8	17	9	135	21	185	Nil	Nil	FEC	Nil	Nil	Mild

		ni 50/F	e	tiredness, pallor of tongue, nail beds, conjuctiva	appetite, pallor of tongue, nail beds, conjuctiva	to 17.3.08	AT	9300	55	36	9	8	16	10,5	129	19	180	Nil	Nil	FEC	Nil	Nil	
26	3734	Priya 25/F	Stude nt	Loss of appetite, tiredness	Nil	1.2.08 to 20.3.08	BT	9700	69	35	6	8	12	9	105	28	159	Nil	Nil	FEC	Nil	Nil	Good
							AT	9800	60	35	5	5	12	11.5	110	26	165	Nil	Nil	FEC	Nil	Nil	
27	2928	Kartham ma 20/F	Cooli	Loss of appetite, tiredness	Nil	1.2.08 to 21.3.08	BT	9800	60	34	6	12	25	9.5	148	22	177	Nil	Nil	FEC	Nil	Nil	Good
							AT	9800	55	42	4	11	25	11	140	19	182	Nil	Nil	FEC	Nil	Nil	
28	5151	Rajeswari 49/F	Tailor	Tiredness, pallor of nail beds, conjuctiva	Pallor of nail beds, conjuctiva	5.2.08 to 28.3.08	BT	8700	53	41	6	20	38	8.5	156	24	189	Nil	Nil	FEC	Nil	Nil	Modera te
							AT	9000	53	42	5	12	22	10	130	20	180	Nil	Nil	FEC	Nil	Nil	
29	6008	Raji 40/F	H. wife	Loss of appetite, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	8.2.08 to 27.3.08	BT	9400	52	43	5	12	20	9.5	84	25	177	Nil	Nil	FEC	Nil	Nil	Modera te
							AT	9100	60	35	5	12	24	11	100	20	195	Nil	Nil	FEC	Nil	Nil	
30	6010	Gantham mal 40/F	H.wif e	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	8.2.08 to 27.3.08	BT	9700	59	35	6	4	7	8	105	28	159	Nil	Nil	FPC	Nil	Nil	Modera te
							AT	9400	58	37	8	5	12	10	125	21	176	Nil	Nil	FPC	Nil	Nil	
31	6206	Suganthan 23/M	Paint er	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Tiredness	8.2.08 to 27.3.08	BT	9600	58	35	7	15	34	8.5	142	27	169	Nil	Nil	FEC	Nil	Nil	Modera te
							AT	9700	52	45	3	6	12	11	140	26	198	Nil	Nil	FEC	Nil	Nil	
32	8381	Maheswa ri 31/F	H.wif e	Loss of appetite, tiredness	Nil	15.2.08 to 4.4.08	BT	9600	59	33	8	15	34	9.5	146	28	164	Nil	Nil	FEC	Nil	Nil	Good
							AT	9600	58	35	7	15	34	10.5	148	23	180	Nil	Nil	FEC	Nil	Nil	
33	6100	Shanmug am 33/M	Sales man	Loss of appetite	Nil	18.2.08 to 9.4.08	BT	9700	59	35	6	4	7	9	105	28	159	Nil	Nil	FEC	Nil	Nil	Good
							AT	9900	63	31	6	20	40	11.5	125	27	178	Nil	Nil	FEC	Nil	Nil	
34	330	Lalitha 32/F	H.wif e	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	6.3.08 to 25.4.08	BT	9400	62	34	7	12	20	8	80	30	200	Nil	Nil	FEC	Nil	Nil	Modera te
							AT	9500	56	41	3	12	38	10.5	98	28	202	Nil	Nil	FEC	Nil	Nil	

35	8322	Jaya 47/F	H.maid	Tiredness, pallor of nail beds, conjuctiva	Nil	11.3.08 to 28.4.08	BT	10300	57	27	16	5	11	9.5	93	21	181	Nil	Nil	OEC	Nil	Nil	Good
							AT	10000	58	32	10	6	11	10.5	110	23	172	Nil	Nil	FEC	Nil	Nil	
36	8580	Malathi 35/F	Steno	Tiredness, pallor of nail beds	Nil	11.3.08 to 29.4.08	BT	9500	54	40	6	15	32	9	120	20	148	Nil	Nil	FPC	Nil	Nil	Good
							AT	9100	54	42	4	11	25	11	110	19	160	Nil	Nil	Nil	Nil	Nil	
37	8443	Meera 33/F	H.maid	Tiredness, pallor of nail beds, conjuctiva	Nil	11.3.08 to 29.4.08	BT	9600	59	35	6	10	18	9.5	82	20	160	Nil	Nil	OPC	Nil	Nil	Good
							AT	9600	59	36	5	10	20	11	90	21	188	Nil	Nil	FEC	Nil	Nil	
38	9295	Stella 48/F	H.maid	Tiredness, pallor of tongue, nail beds, conjuctiva	Pallor of tongue, nail beds, conjuctiva	13.3.08 to 30.4.08	BT	8200	55	41	4	11	20	8	149	39	122	Nil	Nil	FPC	Nil	Nil	Moderate
							AT	8600	52	44	4	11	27	10	140	27	142	Nil	Nil	Nil	Nil	Nil	
39	98	Mekala 30/F	H.wife	Loss of appetite, tiredness, pallor of tongue, nail beds, conjuctiva	Nil	16.3.08 to 2.5.08	BT	9800	55	36	9	5	11	8.5	140	19	217	Nil	Nil	FEC	Nil	Nil	Good
							AT	9800	60	34	6	22	30	11	120	20	210	Nil	Nil	FEC	Nil	Nil	
40	671	Parameswari 27/F	Teacher	Tiredness, pallor of tongue, nail beds, conjuctiva	Nil	17.3.08 to 5.5.08	BT	9400	59	35	6	20	44	9.5	81	18	150	Nil	Nil	OPC	Nil	Nil	Good
							AT	9500	56	41	3	12	38	11.5	90	19	160	Nil	Nil	OPC	Nil	Nil	

TC-Total Count
DC –Differential count
P – Polymorphs
L – Lymphocytes

E – Eosinophils
ESR – Erythrocyte sedementation rate
HB – Haemoglobin
S – Sugar

Ur – Urea
S.ch – Serum cholesterol
A – Albumin
Dep – Deposit

O - Ova
C- Cyst
BT – Before treatment
AT – After treatment

FPC-Few puscells
FEC- Few Epithelial cells
OPC –Occasionally puscells
OEC – Occasionally epithelial cells
OCC.B - Occult Blood

OBSERVATION AND RESULTS
CLINICAL STUDY ON `SARVANOI LINGA CHENDURAM ' IN THE MANAGEMENT OF `KALLADAIPPU'

Sl No.	OP No.	Name Age/sex	Occupation	Complaints		Duration	Investigation																Remarks
								Blood											Urine				
							BT/ AT	TC cells / cu. mm	DC [%]			ESR		Hb (gm)	S(R) (mg %)	Ur (mg %)	S.ch (mg%)	Cr. (mg/dl)	A	S	Dep	USG	
				B.T	A.T				P	L	E	½ hr	1h										
1	3355	Cittibabu 35/M	Electrician	Pain, burning micturation	Nil	1.11.07 to 28.12.07	BT	9800	59	35	6	5	12	9	118	22	180	0.8	Nil	Nil	FPC	Rt.renal calculus – 6mm in the mid pole	Mild
							AT	9700	52	45	3	6	12	11	120	20	175	0.8	Nil	Nil	OPC	Rt.renal calculus – 6mm in the mid pole	
2	943	Dhanalakshmi 60/F	House maid	Pain, burning micturation	Nil	26.11.07 to 30.1.08	BT	9000	57	35	8	20	38	9	210	27	190	0.6	Nil	Nil	OEC	Small 4.4 mm calculus is noted at the Left kidney mid pole region	Good
							AT	10400	63	31	6	12	20	10	(F) 160 (PP) 235	30	209	0.6	Nil	Nil	FEC	Normal study	
3	2703	Hema 28/F	House wife	Pain, burning micturation	Mild pain	30.11.07 to 20.2.08	BT	9800	57	35	8	2	3	9	115	26	158	0.8	Nil	Nil	2-4 EC	Right renal calculus – 6mm in the middle calyx.	Moderate
							AT	10000	58	36	6	5	8	10	120	25	160	0.7	Nil	Nil	OEC	Right renal calculus – 3mm in the middle calyx.	
4	3009	Arul 20/M	Student	Pain	Nil	1.12.07 to 25.1.08	BT	8800	51	45	4	10	22	10	10	23	158	0.6	Nil	Nil	FPC	Bladder calculus – 3mm	Good
							AT	9000	52	45	3	5	12	11	113	22	160	0.7	Nil	Nil	FPC	Normal study	
5	4824	Ponnalagu 56/F	House wife	Pain, burning micturation	Nil	6.12.07 to 1.2.08	BT	9200	58	35	7	20	42	8	128	24	188	0.7	Nil	Nil	FPC	4.5mm calculus is seen in the Right proximal ureter	Good
							AT	9300	60	35	5	10	20	10	132	25	192	0.7	Nil	Nil	FEC	Normal study	
6	6233	Jeyakani 50/F	House wife	Pain	Nil	10.12.07 to 31.1.08	BT	10300	64	32	4	20	38	9.5	79	28	193	0.6	Nil	Nil	FPC	Right renal calculus – 6mm in the upper calyx	Moderate
							AT	10000	57	35	8	6	11	11	82	27	180	0.5	Nil	Nil	FPC	Right renal calculus – 3.5mm in the upper calyx	

7	9179	Saravanasingh 25/M	Computer Engineer	Pain, burning micturation	Nil	18.12.07 to 20.2.08	BT	8100	49	46	5	6	11	14.4	(F)-77 (PP)-92	16	199	0.6	Nil	Nil	FPC	Left renal calculus – 4mm in mid calyx	Good
							AT	9600	55	36	9	9	18	14	128	18	190	0.6	Nil	Nil	FEC	Normal study	
8	6124	Kumar 30/M	Welder	Pain, burning micturation Haematuria	Nil	18.12.08 to 8.2.08	BT	8600	53	40	7	20	42	10	83	18	170	0.7	Nil	Nil	FPC	Left renal calculus - 5.3 mm in mid calyx	Good
							AT	8700	53	41	6	20	38	10.5	105	20	168	0.6	Nil	Nil	FEC	Normal Study	
9	4397	Lakshmi 40/F	House wife	Pain	Nil	3.1.08 to 10.4.08	BT	9400	62	31	7	12	20	10	88	20	180	0.8	Nil	Nil	FEC	Bilateral renal calculus-0.6mm & 0.5mm in the Rt.upper & lower calyx. 0.6m in the left upper calyx	Mild
							AT	9500	56	41	3	12	38	11	80	18	185	0.8	Nil	Nil	FPC	Bilateral renal calculus-0.6mm & 0.5mm in the Rt.upper & lower calyx. 0.6m in the left upper calyx	
10	4241	Annadurai 27/M	Cooli	Pain, burning micturation	Nil	3.1.08 to 9.4.08	BT	9100	55	41	4	4	9	11	72	28	157	0.6	Nil	Nil	FEC	Right renal calyx – 5mm at the mid lower pole	Good
							AT	9400	59	35	6	7	15	13	88	25	177	0.6	Nil	Nil	FEC	Normal study	
11	4585	Selvam 35/M	Conductor	Pain	Mild pain	4.1.08 to 25.2.08	BT	10000	62	32	6	4	9	11.5	90	18	179	0.5	Nil	Nil	OPC	Bilateral renal calculus – Rt-0.7mm & 0.9mm . Lt-0.9mm	Moderate
							AT	9900	63	31	6	20	40	13	109	20	182	0.7	Nil	Nil	FPC	Bilateral renal calculus – Rt-0.7mm. Lt-0.7mm	
12	4710	Sajini 39/F	House wife	Pain, burning micturation	Nil	4.1.08 to 23.2.08	BT	9500	54	40	6	15	32	12	138	23	198	0.7	Nil	Nil	FEC	Right renal calculus – 5mm in the lower pole	Good
							AT	9600	59	35	6	10	18	12.5	125	21	187	0.6	Nil	Nil	FPC	Normal study	
13	4930	Dhanalakshmi 29/F	House wife	Pain	Nil	5.1.08 to 12.4.08	BT	8700	74	22	4	5	11	12.9	108	27	160	1	Nil	Nil	1-2 PC	Bilateral renal calculus – Rt – 0.7 mm & 0.7mm in Right upper & lower calyces. 10mm in right pelvi uretric junction. Lt – 0. 7mm in left upper calyx.	Moderate
							AT	9800	68	28	4	10	22	13	130	28	178	0.9	Nil	Nil	FPC	Bilateral renal calculus – Rt – 0.5mm in the lower pole. Left 0.6mm in the lower pole	
14	5354	Kumaresan 40/M	Peon	Pain, burning	Nil	7.1.08 to 29.2.08	BT	9600	59	33	8	15	34	13.5	125	23	190	0.8	Nil	Nil	FEC	Right renal calculus – 6.5mm in the mid calyx	Mild

				micturation			AT	9600	58	35	7	10	22	14	138	22	181	0.7	Nil	Nil	FEC	Right renal calculus – 6.5mm in the mid calyx	
15	333	Shankar 28/M	Auto Driver	Pain	Mild pain	23.1.08 to 26.3.08	BT	9400	59	35	6	20	44	12.5	119	29	172	0.6	Nil	Nil	FPC	Left ureteric calculus – 7mm in the left proximal ureter.	Moderate
							AT	9500	56	41	3	12	38	13	125	25	190	0.6	Nil	Nil	FPC	Left ureteric calculus – 7mm in the left distal ureter.	
16	340	Padmavathy 45/F	House wife	Pain, burning micturation	Nil	23.1.08 to 28.3.08	BT	8200	55	41	4	11	20	13	88	18	156	0.8	Nil	Nil	FPC	Left renal calculus – 5 mm & 6mm in the middle calyx	Mild
							AT	8600	52	44	4	11	27	12	80	21	153	0.9	Nil	Nil	FPC	Left renal calculus – 5 mm & 6mm in the middle calyx	
17	6224	Kathiravan 37/M	Engineer	Pain, burning micturation	Nil	8.2.08 to 3.4.08	BT	10800	64	32	4	20	38	12.8	145	23	171	0.6	Nil	Nil	FPC	Bilateral renal calculus – Rt – 4mm & 6mm calculus. Lt – 4mm in the inter polar region	Good
							AT	10600	65	33	2	13	32	13.2	120	21	195	0.5	Nil	Nil	FEC	Normal study	
18	6005	Chandra 38/F	House maid	Pain, burning micturation	Mild pain	9.3.08 to 5.5.08	BT	8900	54	40	6	15	32	11	150	17	172	0.6	Nil	Nil	FPC	Left renal calculus – 7mm in the lower pole.	Mild
							AT	9100	54	42	4	11	25	13	142	18	180	0.6	Nil	Nil	FPC	Left renal calculus – 7mm in the lower pole.	
19	1510	Shanthi 50/F	House wife	Pain, burning micturation	Nil	19.3.08 to 9.5.08	BT	8700	53	41	6	20	38	8.5	102	22	190	0.9	Nil	Nil	FPC	Right renal calculus – 4mm in the mid calyx.	Good
							AT	9000	53	42	5	12	22	10	122	25	168	0.7	Nil	Nil	FEC	Normal study	
20	2337	Uma maheswari 33/F	House wife	Pain, burning micturation	Mild Pain	4.4.08 to 26.5.08	BT	9800	57	38	5	12	20	12.5	117	26	172	0.8	Nil	Nil	FEC	Right renal calculus – 8mm in the upper pole	Mild
							AT	9500	56	41	3	12	38	12	106	24	183	0.6	Nil	Nil	FPC	Right renal calculus – 8mm in the upper pole	

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